Abstract

Forty years with NETZSCH-Gerätebau GmbH: A Review of Thermal Analysis from the View of Scientific Basic Research in Forschungszentrum Jülich (former KFA-Jülich)

Dietmar Kobertz

Forschungszentrum Jülich GmbH, IEK-2, Leo-Brandt-Str.1, 52425 Jülich, Germany

It started 1978 with a research project in collaboration with a Bavarian lamp company to develop a higher efficient lamp based on a filling with Mercury – Magnesium amalgams. The phase diagram was studied with the STA 429.

Different projects on alloys containing intermetallic phases, rare earth metal halides for discharged lamps with a Dutch lamp company, oxide systems for solid oxide fuel cells, ferroelectric compounds as base for sensors and solid-state disk (SSD, ReRAM), sulfate systems to understand combustion processes with its unwanted reactions in fossil fuel powerplants, salt systems as potential storage of thermal energy and many more.

During time, comprehensive studies and complementary methods beside the Knudsen effusion mass spectrometry for the determination of thermodynamic data called for further thermoanalytical instruments. Over the years our instrumental park grew by DTA/TG, DSC, Steam-DTA, Skimmer-DTA and dilatometer from Netzsch.

The presentation will show example of interesting studies of the last 40 years. In the frame of the “Selber Kopplungstage 2018” will be more focus on studies with the Skimmer instrument.

There are examples regarding a new compound “Potassium melaminate”, research for solar cells and some work on organic material. The skimmer coupled mass spectrometer with a differential thermal analytical system (DTA/TG) is powerful for the study of the condensed phase simultaneously with vapor phase species.

Jülich, den 7.12.2017

Dietmar Kobertz